

# PATENT ABSTRACTS OF JAPAN

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## (54) MEMBRANE SEPARATION APPARATUS

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a membrane separation apparatus having a membrane filtration performance stabilized for a long time by preventing sludge or the like from being accumulated around hollow fibers of a hollow fiber membrane cartridge.

**SOLUTION:** This membrane separation apparatus is composed of the hollow fiber membrane cartridge and a gas diffusing unit. The hollow fiber membrane cartridge is arranged vertically in this apparatus, which comprises many hollow fiber membranes, both ends of which are glued and fixed and which has openings of hollow fibers in the upper part and in the lower part a skirt-structured part for introducing a gas and gas introducing holes for introducing the gas into the outer surfaces of the hollow fibers. The gas diffusing unit is arranged below the skirt-structure part of the hollow fiber membrane cartridge, which has a plurality of gas diffusing holes per one hollow fiber membrane cartridge.

